

§ 179.300

49 CFR Ch. I (10–1–11 Edition)

Subpart E—Specifications for Multi-Unit Tank Car Tanks (Classes DOT-106A and 110AW)

§ 179.300 General specifications applicable to multi-unit tank car tanks designed to be removed from car structure for filling and emptying (Classes DOT-106A and 110AW).

§ 179.300–1 Tanks built under these specifications shall meet the requirements of §§ 179.300 and 179.301.

§ 179.300–3 Type and general requirements.

(a) Tanks built under this specification shall be cylindrical, circular in cross section, and shall have heads of approved design. All openings shall be located in the heads.

(b) Each tank shall have a water capacity of at least 1500 pounds and not more than 2600 pounds.

(c) For tanks made in foreign countries, a chemical analysis of materials and all tests as specified shall be carried out within the limits of the United States under the supervision of a competent and impartial inspector.

§ 179.300–4 Insulation.

- (a) Tanks shall not be insulated.
- (b) [Reserved]

§ 179.300–6 Thickness of plates.

(a) For class DOT-110A tanks, the wall thickness after forming of the cylindrical portion of the tank must not be less than that specified in § 179.301 nor that calculated by the following formula:

$$t = \frac{Pd}{2SE}$$

Where:

d = inside diameter in inches;

E = 1.0 welded joint efficiency;

P = minimum required bursting pressure in psig;

S = minimum tensile strength of plate material in p.s.i. as prescribed in § 179.300–7;

t = minimum thickness of plate material in inches after forming.

(b) For class DOT-106A tanks, the wall thickness of the cylindrical portion of the tank shall not be less than

that specified in § 179.301 and shall be such that at the tank test pressure the maximum fiber stress in the wall of the tank will not exceed 15,750 p.s.i. as calculated by the following formula:

$$s = [p(1.3D^2 + 0.4d^2) / (D^2 - d^2)]$$

where:

d = inside diameter in inches;

D = outside diameter in inches;

p = tank test pressure in psig;

s = wall stress in psig

(c) If plates are clad with material having tensile strength at least equal to the base plate, the cladding may be considered a part of the base plate when determining the thickness. If cladding material does not have tensile strength at least equal to the base plate, the base plate alone shall meet the thickness requirements.

[29 FR 18995, Dec. 29, 1964, as amended by Order 71, 31 FR 9083, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967; 66 FR 45186, 45390, Aug. 28, 2001]

§ 179.300–7 Materials.

(a) Steel plate material used to fabricate tanks must conform with the following specifications with the indicated minimum tensile strength and elongation in the welded condition. However, the maximum allowable carbon content for carbon steel must not exceed 0.31 percent, although the individual ASTM specification may allow for a greater amount of carbon. The plates may be clad with other approved materials:

| Specifications ² | Tensile strength (psi) welded condition ¹ (minimum) | Elongation in 2 inches (percent) welded condition ¹ (longitudinal) (minimum) |
|-----------------------------|--|---|
| ASTM A 240/A 240M type 304 | 75,000 | 25 |
| ASTM A 240/A 240M type 304L | 70,000 | 25 |
| ASTM A 240/A 240M type 316 | 75,000 | 25 |
| ASTM A 240/A 240M type 316L | 70,000 | 25 |
| ASTM A 240/A 240M type 321 | 75,000 | 25 |
| ASTM A 285 Gr. A | 45,000 | 29 |
| ASTM A 285 Gr. B | 50,000 | 20 |
| ASTM A 285 Gr. C | 55,000 | 20 |
| ASTM A 515/A 515M Gr. 65 | 65,000 | 20 |
| ASTM A 515/A 515M Gr. 70 | 70,000 | 20 |
| ASTM A 516/A 516M Gr. 70 | 70,000 | 20 |

¹ Maximum stresses to be used in calculations.

² These specifications are incorporated by reference (IBR, see § 171.7 of this subchapter.)

(b) [Reserved]